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EXAMINER	
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2609	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/521,745

Applicant(s)RICHARDSON, MICHAEL
RICHARD**Examiner**

Gina McKie

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: SUPPRESSION OF UNWANTED SIGNAL ELEMENTS BY SINUSOIDAL AMPLITUDE WINDOWING.

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because of legal phraseology.

Correction is required. See MPEP § 608.01(b).

4. Applicant is reminded of the proper content of the specification.

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

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- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
 - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the

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invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

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5. The disclosure is objected to because of the following informalities: Failure to include sections and section headings.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tzannes et al. (U.S. Patent No. 6,556,623) in view of Belotserkovsky et al. (U.S. Patent No. 6,628,735).

Consider claim 1, Tzannes discloses a method for processing a signal containing regular or quasi-regular elements of unwanted signal (**see col. 1 lines 15-16 where Tzannes discusses radio frequency interference reduction**), the method comprising the steps of: (i) establishing timing characteristics of the unwanted signal elements in a portion of said signal (**see col. 9 lines 1-6 where Tzannes discusses the cyclic prefix of a signal with RFI**); (ii) generating a time domain window function using said established timing characteristics (**see col. 9 lines 6-7 where Tzannes discusses using the cyclic prefix in the windowing operation and see col. 6 lines 47-52 where Tzannes discusses determining the shape of the time-domain window**); and (iii) applying the generated window function to said signal portion (**see col. 9 lines 7-8**

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and Figure 9 and 10 where Tzannes discusses performing a windowing operation).

Tzannes does not explicitly disclose selectively reducing the amplitude of said unwanted signal elements relative to other elements of said signal. Belotserkovsky discloses applying the generated window function to said signal portion to selectively reduce the amplitude of said unwanted signal elements relative to other elements of said signal (see col. 2 lines 20-27 where Belotserkovsky discusses lowering the sidelobes of the frequency domain spectrum by performing a windowing operation in the time domain).

It would have been obvious to one skilled in the art at the time the applicant's invention was made to modify the invention of Tzannes as taught by Belotserkovsky and use the window function to reduce the amplitude of the unwanted signal elements, thus allowing a clearer desired signal due to less interference (see Belotserkovsky col. 7 lines 25-27 where Belotserkovsky discusses lowering sidelobes to result in less interference).

Consider claim 2, Tzannes discloses a method according to claim 1, wherein said time domain window function is a sinusoidal function (see Figure 3 element S330).

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tzannes and Belotserkovsky as applied to claim 1 above, and further in view of Daspit et al. (U.S. Patent No. 3,754,101).

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Consider claim 3, Tzannes and Belotserkovsky disclose a method according to claim 1, further comprising the step of: (iv) applying a Fourier transform to the signal output from step (iii) (**see col. 9 lines 10-11 and Figure 9 element S940**). Tzannes and Belotserkovsky do not explicitly disclose applying an algorithm to restore the shape of peaks in the transformed signal to an approximation of their form in the absence of said unwanted signal elements. Daspit discloses applying an algorithm to restore the shape of peaks in the transformed signal to an approximation of their for in the absence of said unwanted signal elements (**see col. 4 lines 21-25 and 40-44 where Daspit discusses double sideband suppressed carrier amplitude modulation**).

It would have been obvious to one skilled in the art at the time the applicant's invention was made to modify the invention of Tzannes and Belotserkovsky as taught by Daspit and apply an algorithm to restore the shape of peaks in the transformed signal to an approximation of their form in the absence of said unwanted signal elements, thus only retaining the useful spectral elements (**see Daspit col. 4 lines 36-40**).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tzannes and Belotserkovsky as applied to claim 2 above, and further in view of Koga et al. (U.S. Patent No. 6,577,686).

Consider claim 4, Tzannes and Berlotserkovsky disclose a sinusoidal window function, however, do not specifically disclose its arrangement to have a zero crossing substantially coinciding with the position of each unwanted signal element established at step (ii). Koga discloses a method according to claim 2, wherein said sinusoidal

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window function is arranged to have a zero crossing substantially coinciding with the position of each unwanted signal element established at step (ii) (**see col. 1 lines 60-63 where Koga discusses calculating a weight for the purpose of reducing or eliminating the amplitude of interference**).

It would have been obvious to one skilled in the art at the time the applicant's invention was made to modify the invention of Tzannes and Berlotserkovsky as taught by Koga and arrange for the sinusoidal window function to have a zero crossing coinciding with the position of each unwanted signal element, thus allowing better performance against interference (**see Koga col. 1 lines 43-44**).

Furthermore, official notice is taken that multiplication by zero yields zero. Therefore, it would have been obvious to a person of ordinary skill in the art to arrange the sinusoidal window function to have a zero crossing substantially coinciding with the position of each unwanted signal element established at step (ii), thus eliminating the unwanted signal elements upon performing the windowing operation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gina McKie whose telephone number is 571-270-5148. The examiner can normally be reached on Monday-Thursday between the hours of 8:00 AM and 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on 571-272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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